

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

166.3
M68
no. 52
cop. 2

UNITED STATES DEPARTMENT OF AGRICULTURE
FARM CREDIT ADMINISTRATION
WASHINGTON, D. C.

COOPERATIVE CREAMERY TRUCK ROUTES IN THE UNITED STATES

By

PAUL E. QUINTUS

COOPERATIVE RESEARCH AND SERVICE DIVISION

Miscellaneous Report No. 52

April 1942

INV. '60

LIBRARY
FBI

FARM CREDIT ADMINISTRATION

A. G. Black - Governor

COOPERATIVE RESEARCH AND SERVICE DIVISION

T. G. Stitts - Chief

W. W. Fetrow - Associate Chief

SUMMARY

The efficient use of trucks and labor in the assembly of milk and cream is essential to the war efforts. This report summarizes a number of facts regarding the hauling arrangements at cooperative creameries.

Reports from 914 cooperative creameries indicate that 700, or 77 percent, operated one or more regularly scheduled truck routes. The remaining 33 percent received all their volume from direct patron deliveries. Of the creameries using trucks, about 10 percent received some station cream.

Only 14 percent of the creameries using trucks received less than 21 percent of their volume from routes. About 28 percent had more than 81 percent trucked receipts. Exclusive of Minnesota, 42 percent of the creameries received more than 81 percent of their volume from routes.

The 700 creameries with trucks operated 5,205 routes. Of these, 69 percent were cream routes, 14 percent were milk routes and 17 percent handled mixed loads. There was an average of 7.4 routes per creamery.

The 5,205 routes were served by 3,659 trucks or an average 1.4 routes per truck. Eighty-four percent of these trucks were employed on a commission basis and 16 percent were owned and operated by the creameries. In all, 36 percent of the trucks were equipped with enclosed bodies. Of the creamery owned trucks, more than half were enclosed.

On the matter of ownership of cans used on routes, patron ownership ranked first with 46 percent, divided creamery and patron ownership was intermediate with 30 percent, and complete creamery ownership accounted for the remaining 24 percent. There was wide variation in can ownership arrangements among the various states.

For the country as a whole, 18 percent of the cream routes were served more than 3 times per week in summer and at least 3 times in winter. However, 26 percent of the cream routes in Minnesota, Iowa, and Wisconsin fell in this group.

A frequency schedule which provided for 3 trips weekly in summer and 2 (or more) in winter included 39 percent of all routes. The least frequent collection service with 2 trips in summer and 2 or more in winter, included the remaining 43 percent of all routes. This schedule accounted for only 26 percent of all creameries because it was used relatively little in Minnesota, Iowa, and Wisconsin.

About 85 percent of the creameries with commission cream haulers followed the practice of paying haulers on the basis of pounds of butterfat collected. Of these, 41 percent paid less than 1.75 cents per pound, 42 percent paid 1.75 - 2.24 cents and the remaining 17 percent paid 2.25 cents or more. The bulk of the rates in the highest classification were reported from Iowa.

The second most frequent method of paying commission haulers was a fixed rate per 100 pounds of cream. This method was usually associated with relatively low rates. Other creameries used a variety of methods including a fixed amount per mile, a fixed amount per trip, a fixed amount per can, or a fixed amount per patron per month.

In about 68 percent of the cases rates were arrived at as a result of negotiations between the creamery and the haulers. Most of the others were established directly between the patrons and the hauler, with about 4 percent using the competitive bid system.

About half the creameries deducted the exact amount paid haulers from the patrons' checks and the other half split the deduction with a strong tendency to deduct 1 cent, even though the rates paid haulers covered a range up to 3 cents. A limited number of creameries quoted prices net at the farm with no deductions shown for hauling. Minimum and maximum deductions per patron were also reported in several cases.

Generally speaking, milk hauling arrangements were much more standardized than cream hauling arrangements. Virtually all commission rates were based on 100 pounds of milk with hauling deductions always shown on the check. As with cream, however, several creameries (44 percent) deducted less than the full amount paid milk haulers.

Nearly 55 percent of the creameries paid milk haulers from 10 to 14 cents per 100 pounds. Only 5 percent paid less and 40 percent paid more.

COOPERATIVE CREAMERY TRUCK ROUTES IN THE UNITED STATES

By

Paul E. Quintus
Senior Agricultural Economist

CONTENTS

	<u>Page</u>
Number of creameries using trucks	2
Proportion of receipts arriving on trucks	4
Number and types of routes.	6
Number of trucks used	8
Association ownership of trucks	10
Types of truck bodies	10
Ownership of milk and cream cans.	13
Frequency of collection on cream routes	15
Commission rates on cream routes.	18
Method of arriving at hauling rates	23
Hauling deductions on cream routes.	25
Rates and deductions on milk routes	27

With the expansion of milk and cream routes in local creamery territories of the United States, a widespread interest gradually developed in procurement efficiency. However, the outbreak of the war and the subsequent shortage of rubber and other critical materials found most local creamery patrons still tolerating the wasteful assembly arrangements that developed haphazardly during the days of plenty.

The information contained in this report on cooperative creamery routes was obtained from a mailed questionnaire in the fall of 1940. It is presented here as a background of factual material on hauling arrangements and practices. It contains a minimum of analysis and in no way provides a basis for suggesting a reorganization of existing routes to meet war-time conditions. The report is rather in the nature of introduction to an analytical study for which information has been obtained from personal visits to several creameries with extensive truck route experience and from other sources.

The mailed questionnaire referred to above was returned by 914 local cooperative creameries in the United States. This represents around two-thirds of all cooperative creameries in operation and thus constitutes a large sample. The tri-State butter area composed of Minnesota, Iowa, and Wisconsin accounted for 673, or about

74 percent of the reports -- roughly the same as the percentage of total cooperative creameries located in that area. Because of their importance, the situation in these 3 States is given most attention.

In all, reports were received from 28 States, but for purposes of analysis, individual results have been calculated for 20 States and the remaining 8, mainly in the northeast, have been combined as "other States" 1/.

NUMBER OF CREAMERIES USING TRUCKS

The number of returns and the number and proportion of creameries using trucks is shown by States in table 1. Of the 914 creameries, 700, or 77 percent, operated one or more regularly scheduled truck routes and 214, or 33 percent, obtained all their supplies by direct patron delivery. Also, 91 creameries, or 10 percent of the total, received some station cream. All of these were among the 700 operating routes.

In the heavy producing area, Minnesota, with 68 percent, had the least truck route development and, because of its weight in the national total, that State holds down the average percentage for the country as a whole. Exclusive of Minnesota, about 83 percent of all reporting creameries used trucks. Reports from Wisconsin and Iowa showed 85 and 90 percent, respectively, of the cooperative creameries using trucks.

Minnesota included 124, or more than half the 214 reporting creameries depending exclusively on direct patron delivery. The creameries there, in the main, were established early in dense production territories as strictly local enterprises. Because of this and because of the emphasis on quality, they have not readily adopted extensive trucking systems. In fact, many Minnesota creameries rather apologized for having trucks with such statements as, "We are opposed to the principle of trucks but competition has forced us to use them." Many of those without trucks made statements which indicated that they took considerable pride in their situation. Thus, the opposition to trucks appears to be more noticeable in Minnesota than elsewhere. A similar feeling undoubtedly prevails in other limited areas where expanding truck routes serve to disrupt a long established procurement and manufacturing system. In the newer areas, however, where trucks and creameries came in together, truck routes appear to be accepted as a natural and logical part of the local creamery industry.

The 91 creameries receiving station cream included nearly every State and on a percentage basis were highest in Missouri, Kansas, and North Dakota. However, in most cases, the percentage of station

1/ Other States include Maine, Vermont, Pennsylvania, New York, Mississippi, Wyoming, Utah and Texas.

Table 1.- Number of Cooperative Creameries Reporting and Number and Percentage Using Truck Routes and Cream Stations, by States, 1940

State	Total creameries reporting	Creameries reporting truck routes		Creameries reporting cream stations	
	Number	Number	Percent	Number	Percent
Ohio	5	4	80	3	60
Indiana	10	9	90	2	20
Michigan	35	33	94	6	17
Illinois	11	9	82	4	36
Tennessee	3	3	100	1	33
Wisconsin	144	122	85	1	1
Minnesota	391	267	68	23	6
Iowa	138	124	90	7	5
North Dakota	18	10	56	8	44
South Dakota	27	19	70	8	30
Nebraska	23	16	70	7	30
Kansas	11	10	91	2	18
Missouri	8	7	88	5	63
Oklahoma	8	6	75	3	38
Colorado	5	3	60	3	60
Montana	4	3	75	0	-
Idaho	6	6	100	2	33
Washington	16	14	88	3	19
Oregon	12	11	92	0	-
California	13	12	92	1	8
Other States	26	12	46	2	8
United States total	914	700	77	91	10

cream was small, averaging about 5 to 10 percent of the total volume. Station cream was particularly light in the tri-State butter area and on the West Coast. Only 1 of the 144 creameries reporting from Wisconsin received any station cream.

PROPORTION OF RECEIPTS ARRIVING ON TRUCKS

Since some creameries use truck routes to a limited extent to supplement direct patron deliveries while others depend almost entirely on truck routes for procurement, each creamery using trucks was asked to indicate the percentage of its volume which arrived on regularly scheduled routes. The results of this tabulation are recorded in table 2.

The United States' totals and percentages are shown at the end of the table. Only 14 percent of all creameries reporting trucks received less than 21 percent of their volume from routes. This is the lowest percentage for any frequency group. There was no material difference between the next three frequency groups extending from 21 to 30 percent, each of them accounting for about 18 percent of the total creameries. The range from 31-100 percent trucked receipts, included 198 creameries, or 28.5 percent of the total. Thus, the classification covering the highest percentage of trucked receipts represented the most creameries. Moreover, this class included 91 creameries which received essentially 100 percent of their volume on trucks. Twenty-three of these were located in Wisconsin and 21 in Iowa.

When Minnesota is removed from the totals, the class under 21 percent trucked volume drops to 6.4 percent of the remaining creameries, and the 31-100 percent class increases to 41.6 percent. This again illustrates that procurement by truck has not developed in Minnesota to the same extent that it has in other States.

Table 2 does not in itself measure the correct importance of trucking as a method of procurement. This could not be determined without weighing the percentage of trucked volume received at each creamery by the total receipts at that creamery. But total receipts have not been ascertained. It can only be generalized that since the largest creameries tend to have the highest percentage of trucked receipts, trucking is much more important as a procurement method than this table would indicate.

Table 2. - Proportion of Butterfat Received on Truck Routes at 695 Cooperative Creameries in the United States, 1939.

State	Distribution of creameries according to the percentage of receipts arriving on trucks -						Total Number
	Under 21	21-40	41-60	61-80	81-100	Unknown	
	Number	Number	Number	Number	Number	Number	
Ohio	-	-	3	1	-	-	4
Indiana	-	-	2	2	4	1	9
Michigan	1	-	1	6	25	-	33
Illinois	-	1	2	1	4	1	9
Tennessee	1	-	-	1	1	-	3
Wisconsin	8	15	21	24	49	5	122
Minnesota	69	82	56	30	18	7	<u>1/</u> 262
Iowa	8	12	24	31	46	3	124
North Dakota	3	3	1	2	1	-	10
South Dakota	-	2	4	9	4	-	19
Nebraska	2	-	2	3	9	-	16
Kansas	-	-	-	-	10	-	10
Missouri	1	2	3	-	1	-	7
Oklahoma	-	2	1	1	2	-	6
Colorado	-	1	1	1	-	-	3
Montana	-	-	-	3	-	-	3
Idaho	-	-	-	1	4	1	6
Washington	2	-	3	2	7	-	14
Oregon	-	1	-	2	7	1	11
California	1	1	3	3	3	1	12
Other States	1	1	1	3	3	3	12
United States total	97	123	128	126	198	23	695
Percent of total	14.0	17.7	18.4	18.1	28.5	3.3	100.0
United States total less Minnesota	28	41	72	96	180	16	433
Percent of total	6.4	9.5	16.6	22.2	41.6	3.7	100.0

1/ Reduced from 267 to 262 because 5 creameries reporting from Minnesota did not operate routes until 1940.

NUMBER AND TYPES OF ROUTES

For the purpose of this survey, routes were classified as: (1) cream exclusively, (2) milk exclusively, and (3) mixed milk and cream. Table 3 shows the number of routes of each type by States and for the United States. The 700 creameries with trucks operated 5,205 routes. Of these, 3,597, or 69 percent, were cream routes. Only 728 routes, or 14 percent, were devoted exclusively to milk and the remaining 17 percent handled mixed loads.

Iowa, which ranked third in the number of creameries reporting routes (table 1) ranked first by a substantial margin in the number of routes with 1,063, roughly one-fifth of the total. Virtually all the Iowa routes were cream routes. Wisconsin, Minnesota, and Michigan were next in order as to the number of routes.

Wisconsin differed widely from other Middle Western States in respect to the importance of milk and mixed routes. For example, half of Wisconsin's 859 routes were of the mixed type, and almost half the mixed routes in the United States were reported from Wisconsin. In addition, Wisconsin had 137 milk routes, more than any other State. Missouri, to be sure, shows 120 milk routes out of a total of 150 routes, but this high proportion of milk is scarcely representative of the State, since all the reported milk routes were operated by two organizations. Milk routes are also relatively important in California and other Pacific Slope States. Five States reported no milk routes and 6 had no mixed routes.

Average Number of Routes per Creamery

Since 700 creameries operated 5,205 routes, the average number was about 7.4 routes per creamery. However, this average is not typical of many of the individual States. This is shown in the last column of table 2 and is calculated from the creameries using routes as recorded in table 1. For example, the 267 Minnesota creameries with routes operated an average of 3.1 routes each. Exclusive of Minnesota, the creameries averaged slightly more than 10 routes each. Iowa and Wisconsin fell near the average for the country and, of course, had important weights in determining the average.

Indiana reported the highest average number of routes per creamery, with 32.4. Kansas, Idaho, and Missouri each averaged more than 20 routes per creamery. State averages, like the United States' average, are not necessarily representative of many creameries within a State. In Wisconsin, for example, where the average was 7, approximately half the creameries operated 4 routes or less, and 35 percent operated 8 routes or more. The upper 10 creameries had from 20 to 28 routes each. In Minnesota, 60 percent of the creameries with routes operated only 1 or 2 routes. The remainder had from 3 to extremes of 22 and 25 routes each.

Table 3.- Number of Routes Operated by 700 Cooperative Creameries Classified According to Type, by States, 1940.

State	Routes classified as -			Total routes	Average routes per creamery
	<u>Cream</u>	<u>Milk</u>	<u>Mixed</u>		
	<u>Number</u>	<u>Number</u>	<u>Number</u>	<u>Number</u>	<u>Number</u>
Ohio	50	10	-	60	15.0
Indiana	240	51	1	292	32.4
Michigan	414	80	21	515	15.6
Illinois	124	10	1	135	15.0
Tennessee	35	-	-	35	11.7
Wisconsin	296	137	426	859	7.0
Minnesota	673	52	100	825	3.1
Iowa	1,044	5	14	1,063	8.6
North Dakota	36	-	-	36	3.6
South Dakota	101	-	-	101	5.3
Nebraska	156	3	-	159	9.9
Kansas	193	51	7	251	25.1
Missouri	30	120	-	150	21.4
Oklahoma	75	31	5	111	18.5
Colorado	8	-	-	8	2.7
Montana	11	-	2	13	4.3
Idaho	23	23	97	143	23.8
Washington	14	17	77	108	7.7
Oregon	55	18	51	124	11.3
California	15	99	20	134	11.2
Other States	4	21	58	83	6.9
United States total	3,597	728	880	5,205	1/ 7.4
Percentage of total	69	14	17	100	

1/ Average.

The two creameries with the largest number of routes operated 81 routes each. One of these was located in Michigan and one in Missouri. An Indiana creamery operated 75 routes and 4 others in various parts of the country had from 45 to 60 routes.

NUMBER OF TRUCKS USED

Assuming 1 truck per route as in the typical case, the relation between the number of routes and number of trucks depends upon the frequency with which the routes are served. Thus, in the case of daily milk collections, it takes as many trucks as there are routes, while with cream collection, say, two times a week, a single truck can, and usually does, serve 3 routes.

The 5,205 routes listed in table 3 were served by 3,655 trucks, or an average of 1.42 routes per truck. The number of trucks reported from each State and the routes per truck are shown in table 4.

Wisconsin creameries, where milk and mixed routes are important, reported 737 trucks, the largest number of any State. This was only slightly more than 1 route per truck. A similar situation prevailed in Idaho, Washington, California, Missouri, and in "other States" -- all States with a high percentage of milk routes. Actually there were fewer routes than trucks in California and Missouri due to arrangements whereby 2 or more trucks are used on 1 route. Usually a route is one truck load, but there are the exceptional cases where one individual owns several trucks with the records kept as one route.

There were only 1.24 routes per truck in Minnesota even though more than 80 percent of the Minnesota routes handled cream exclusively. The explanation here appears to be the frequency with which cream is collected, plus the fact that many Minnesota creameries reported but 1 truck and 1 route.

In the States where creameries receive mainly farm separated cream, and where collections are relatively infrequent, there was an average of 2 or more routes per truck. Thus, in Nebraska the ratio was 2.69 to 1 and in South Dakota, Montana, Ohio, Illinois, and Colorado, the ratio was 2 to 1 or more.

As would be expected, there was a high concentration of all trucks in the tri-State butter area. However, the ratio of trucks to creameries is lower here than for the rest of the country. Thus, while this area includes 74 percent of the creameries reporting trucks, it accounted for only 56 percent of the trucks operated.

Table 4. - Number of Trucks Used and Number of Routes per Truck, 700
Cooperative Creameries in the United States, 1940.

State	Creameries reporting routes <u>Number</u>	Trucks used <u>Number</u>	Total routes operated <u>Number</u>	Routes per truck <u>Number</u>
Ohio	4	27	60	2.22
Indiana	9	148	292	1.97
Michigan	33	287	515	1.79
Illinois	9	62	135	2.18
Tennessee	3	30	35	1.17
Wisconsin	122	737	859	1.16
Minnesota	267	662	825	1.24
Iowa	124	643	1,063	1.65
North Dakota	10	19	36	1.89
South Dakota	19	38	101	2.65
Nebraska	16	59	159	2.69
Kansas	10	137	251	1.83
Missouri	7	163	150	0.92
Oklahoma	6	67	111	1.66
Colorado	3	4	8	2.00
Montana	3	5	13	2.60
Idaho	6	131	143	1.09
Washington	14	103	108	1.05
Oregon	11	84	124	1.48
California	12	173	134	0.79
Other States	12	80	83	1.04
United States total	700	3,659	5,205	1.42

ASSOCIATION OWNERSHIP OF TRUCKS

One of the important questions facing creameries is whether procurement trucks should be owned by the creamery and operated by an employee or engaged on a contract or commission basis with an independent operator. The commission method has been standard since the introduction of routes and creamery ownership is still the exception to the rule. However, the success attained by a few associations with their own trucks is creating a widespread interest in ownership and there appears to be a trend in this direction.

Of the 3,659 trucks reported, 3,070 were employed on a commission basis and 589, or 16.1 percent of the total, were owned and operated by the creameries. These totals, together with the number and percentage of creamery owned trucks are shown in table 5.

The number of association owned trucks ranged from none in Oklahoma to 76 in Michigan. Washington, Iowa, and Minnesota ranked next highest in numbers owned but Iowa and Minnesota were among the lowest in the percentage of total trucks that were owned. On this basis, Washington was highest with 63 percent, and Nebraska, Illinois, South Dakota, and Oregon each had 50 percent or more. Among the leading butter producing States, Wisconsin with 3.1 percent, shows the least development toward association ownership of trucks.

The last column of table 5 shows that the 589 association trucks were owned by 181 creameries. This indicates that about one-fourth of the creameries reporting routes owned at least one procurement truck. Only 88 creameries, or about 12.5 percent of the total, however, owned all the trucks used on their routes.

More than one-third of the creameries owning all their trucks were located in Minnesota. This fact would be misleading, however, without additional explanation. Twenty of the Minnesota creameries classified as owning all their trucks operated only 1 truck. Eight others in this group had 2 trucks, while the remaining 3 owned and operated 3 trucks each. Even among those owning part of their procurement trucks, the number owned was either 1 or 2 in each case. Thus, the 41 Minnesota creameries owning trucks represented only 54 trucks. By way of comparison, 9 Washington creameries owned 65 trucks.

TYPES OF TRUCK BODIES

One of the rather recent developments in cream procurement on routes has been the introduction of enclosed truck bodies on a large scale. Of the 3,659 trucks reported in the nation-wide survey, 1,332, or 36 percent, were equipped with enclosed bodies of varying design and construction. The number and percentage of open and enclosed trucks is shown in table 6, by States and for the United States.

Table 5. - Number of Procurement Trucks Used and Number of Procurement Trucks Owned by 700 Cooperative Creameries in the United States, 1940.

State	Trucks used	Trucks owned by cream- eries	Percent- age of trucks owned	Creameries owning	
	Number	Number	Percent	At least one truck	All trucks used
Ohio	27	9	33.3	2	1
Indiana	148	41	27.7	6	0
Michigan	287	76	26.5	22	6
Illinois	62	32	51.6	8	2
Tennessee	30	3	10.0	1	1
Wisconsin	737	23	3.1	13	4
Minnesota	662	56	8.5	41	31
Iowa	643	61	9.5	18	6
North Dakota	19	9	47.4	5	5
South Dakota	38	19	50.0	10	8
Nebraska	59	35	59.3	11	7
Kansas	137	41	29.9	5	3
Missouri	163	8	4.9	5	2
Oklahoma	67	0	0	0	0
Colorado	4	1	25.0	1	0
Montana	5	2	40.0	2	0
Idaho	131	40	30.5	4	2
Washington	103	65	63.1	9	4
Oregon	84	43	51.2	10	5
California	173	14	8.1	4	1
Other States	80	11	13.8	4	0
United States total	3,659	539	16.1	131	88

Table 6. - Types of Bodies Used on Procurement Trucks at 700 Cooperative Creameries in the United States, 1940.

State	Type of truck bodies used -					
	Number of bodies			Percentage of total bodies		
	Open	Enclosed	Total	Open	Enclosed	Total
	Number	Number	Number	Percent	Percent	Percent
Ohio	17	10	27	63	37	100
Indiana	102	46	148	69	31	100
Michigan	91	196	287	32	68	100
Illinois	30	32	62	48	52	100
Tennessee	29	1	30	97	3	100
Wisconsin	531	206	737	72	28	100
Minnesota	406	256	662	61	39	100
Iowa	393	250	643	61	39	100
North Dakota	9	10	19	47	53	100
South Dakota	3	35	38	8	92	100
Nebraska	22	37	59	37	63	100
Kansas	61	76	137	45	55	100
Missouri	38	125	163	23	77	100
Oklahoma	61	6	67	91	9	100
Colorado	3	1	4	75	25	100
Montana	3	2	5	60	40	100
Idaho	127	4	131	97	3	100
Washington	99	4	103	96	4	100
Oregon	56	28	84	67	33	100
California	173	0	173	100	0	100
Other States	73	7	80	91	9	100
United States total	2,327	1,332	3,659	64	36	100

Among the States reporting 100 or more trucks, Missouri ranked first with 77 percent enclosed, and Michigan second with 68 percent. Nebraska and Kansas were next in order, with 63 and 55 percent respectively.

In the heavy producing territory, Iowa and Minnesota each reported 39 percent enclosed bodies. The proportion was substantially less than this in Wisconsin, where there is a higher proportion of whole milk routes and a smaller number of association-owned trucks. Generally speaking, milk trucks are less likely to be enclosed than cream trucks, probably because milk trucks are ordinarily on the route only during the early part of the day. That association-owned trucks are more likely to be enclosed than independent trucks is evidenced by the fact that only one-third of the commission trucks were enclosed, while more than half of the association trucks were enclosed.

A few creameries reported that they provided enclosed bodies for private haulers, or allowed them a certain sum of money for the body, thus increasing the percentage in this group somewhat. Apparently, however, most creameries have not found it feasible or desirable to require commission haulers to equip their trucks with enclosed bodies.

The percent of enclosed bodies was low in Idaho and in the Pacific Coast States. The importance of whole milk in this area plus the differences in climatic conditions probably accounts for this. In the case of California, where the bulk of the trucks handle whole milk and where only a small percentage of them are association-owned, all were of the open type.

OWNERSHIP OF MILK AND CREAM CANS

The use of truck routes doubles the number of cans required by each patron since one set of cans, for practical purposes, is always away from the farm. Under direct patron delivery, the cans are returned on the same trip so that they are always available for farm use. Accordingly, with the introduction of truck routes, many creameries provided the extra set, if not all the cans, to relieve the patrons of this additional investment. Thus the basis of ownership of the delivery cans used on truck routes, although in a different classification from truck routes proper, has certain procurement aspects.

Three ownership systems are practiced throughout the United States; namely, (1) the patrons own all the cans; (2) the association owns all the cans; or (3) the ownership is divided between the association and the patrons. The divided arrangement is usually fifty-fifty, but a few creameries have some other arrangement whereby they own "some of the cans," "most of the cans," or otherwise deviate from the fifty-fifty division.

Table 7 - Ownership of Cans Used on Routes at 695 Cooperative Creameries in the United States, 1940.

State	Ownership of milk and cream cans:									
	Number of creameries					Percentage of total creameries				
	Creamery		Patrons		Divided		Total: Creamery		Patrons	
	Number	Number	Number	Number	Number	Number	Percent	Percent	Percent	Total Percent
Ohio	1	1	2	4	25	25	50	100		
Indiana	5	1	3	9	56	11	33	100		
Michigan	2	23	8	33	6	70	24	100		
Illinois	-	7	2	9	-	78	22	100		
Tennessee	-	2	1	3	-	67	33	100		
Wisconsin	52	48	22	122	43	39	18	100		
Minnesota	44	123	99	266	17	46	37	100		
Iowa	20	65	36	121	16	54	30	100		
North Dakota	1	6	3	10	10	60	30	100		
South Dakota	5	4	10	19	26	21	53	100		
Nebraska	5	2	8	15	33	13	54	100		
Kansas	1	9	-	10	10	90	-	100		
Missouri	-	3	4	7	-	43	57	100		
Oklahoma	-	4	2	6	-	67	33	100		
Colorado	1	-	2	3	33	-	67	100		
Montana	-	3	-	3	-	100	-	100		
Idaho	1	5	-	6	17	83	-	100		
Washington	11	2	1	14	79	14	7	100		
Oregon	7	4	-	11	64	36	-	100		
California	12	-	-	12	100	-	-	100		
Other States	2	8	2	12	17	66	17	100		
United States total	170	320	205	695	24	46	30	100		

The relative importance of each ownership method as reported by 695 cooperative creameries is shown in table 7. Considering first the United States' totals, complete patron ownership ranked first with 46 percent; divided ownership was intermediate, with 30 percent; and in the remaining 24 percent of the cases, the creamery owned all the cans. Again, wide variations prevailed among the various States with little apparent geographical pattern. Perhaps the most noticeable similarity was the tendency for creamery ownership in the Pacific Slope States, ranging from 64 percent in Oregon to 100 percent in California. Indiana and Wisconsin were also high in the percentage of creameries owning all cans.

The situation in Wisconsin is of some interest, since it differed widely in respect to creamery ownership compared with the adjacent States of Minnesota, Iowa, and Illinois. Likewise, the situation as between the adjacent States of Michigan and Indiana was almost completely reversed. Apparently practices develop within a State in response to factors there which may not be duplicated elsewhere.

FREQUENCY OF COLLECTION ON CREAM ROUTES

Frequency of collection is a major consideration with truck route procurement. The more frequent the collection, the higher the procurement cost. But more frequent deliveries also enhance the quality of the cream received. Accordingly, every creamery must weigh the advantages of quality against the cost of obtaining it. Generally speaking, creameries located in the more sparse production areas feel that the market differential for higher quality butter is not enough to justify more than two trips per week on cream routes. Heavy producing territories ordinarily have the advantage of better quality because, among other reasons, it is feasible to collect whole milk or make three or more trips per week on cream routes.

For the purpose of determining the usual practices in respect to frequency of collections in all parts of the country, each creamery was asked to report the number of trips made per week on each of its routes. Where any seasonal change took place, as was usually the case, separate schedules were reported for summer and for winter months. More frequent summer schedules are typical on cream routes mainly to compensate for the effects of temperature on the deterioration of cream. The second reason is to accommodate the peak volume without expanding trucking facilities.

The dates of the summer schedules vary from creamery to creamery and from area to area, depending on the temperature and when the flush comes on. Because seasons vary in these respects, the same creamery may use different summer schedules from year to year. By and large, the summer schedules run from about April 15 to October 1. During the late summer and early fall collection costs tend to be highest because production is off, but the temperature necessitates frequent collections.

Frequency Schedules in Various States

Since most milk routes are served daily (some are served every-other-day in the winter months) only the reports received on routes handling cream exclusively have been analyzed from the standpoint of frequency of collection. Thus, the 3,597 cream routes listed in table 3 are distributed in table 8 according to 3 groups of different frequency schedules.

The routes in group No. 1 were served more than 3 times per week in summer and at least 3 times per week in winter. With few exceptions, this meant a summer schedule of 4 trips and a winter schedule of 3 trips. The exceptions were mostly every-other-day in summer. A few creameries reported collecting cream daily or daily except Sunday. For the country as a whole, there were 646 routes in group No. 1 -- 18 percent of the total.

Group No. 2 includes all routes which were operated 3 times per week in summer and 2 (or more) times in winter. The exception here was mostly 3 trips per week the year around -- a schedule reported by a few creameries in Minnesota, Iowa, and Oregon. Also, every third day was used as a winter schedule by 2 creameries. The 3-2 schedule predominated in the tri-State butter area, but included only 38.6 percent of the routes reported from all States.

Group No. 3 includes all the remaining routes, and they were served at least 2 times per week in summer and 1 or 2 times in winter. Somewhat more than half of these were 2 trips per week the year round. This system prevailed generally outside of the tri-State butter area and the Pacific Slope States and represented 43.4 percent of all routes. Thus, it was the leading schedule for the country as a whole. However, since the large creameries, and those with the largest number of routes, tend to be outside of the heavy butter area, only 26 percent of the creameries used this frequency schedule. The intermediate schedules ranked first in terms of creameries, with 44 percent, and the high frequency schedules included 30 percent of the creameries, largely due to the influence of Minnesota, Iowa, and Wisconsin.

Individual States vary considerably from the national totals. If Minnesota, Iowa, and Wisconsin are considered as one group and all other States as one group, some sharp changes result in the percentage distribution. This is shown at the end of table 8. Whereas 18 percent of all routes are in the high frequency group, 26.3 percent of the routes for the 3 States are in this group and only 7.3 percent for the remaining States. At the other extreme, these 3 States reported only 8.9 percent of their routes in the low frequency group, while all other States had 37.4 percent in this group. All the cream routes reported from California and Idaho were in the high frequency group, but this is mainly a whole milk territory where cream routes are relatively unimportant. Oregon and Tennessee were the only other States in which the group with the least number of trips per week

Table 8. - Distribution of 3,597 Cream-Routes. According to Frequency of Collection in Several States, 1940.

(Reported by 556 Cooperative Creameries)							
Distribution of cream routes according to trips per week:							
State	Group 1 1/		Group 2 1/		Group 3 1/		Total
	Number	Percent	Number	Percent	Number	Percent	
Ohio	-	-	-	-	50	100.0	50 100.0
Indiana	-	-	-	-	240	100.0	240 100.0
Michigan	7	1.7	2	0.5	405	97.8	414 100.0
Illinois	1	0.8	-	-	123	99.2	124 100.0
Tennessee	26	74.3	1	2.8	8	22.9	35 100.0
Wisconsin	40	13.5	220	74.3	36	12.2	296 100.0
Minnesota	215	31.9	376	55.9	82	12.2	673 100.0
Iowa	275	26.4	708	67.8	61	5.8	1,044 100.0
North Dakota	6	16.7	4	11.1	26	72.2	36 100.0
South Dakota	8	7.9	29	28.7	64	63.4	101 100.0
Nebraska	10	6.4	-	-	146	93.6	156 100.0
Kansas	-	-	-	-	193	100.0	193 100.0
Missouri	-	-	4	13.3	26	86.7	30 100.0
Oklahoma	-	-	-	-	75	100.0	75 100.0
Colorado	3	37.5	-	-	5	62.5	8 100.0
Montana	-	-	-	-	11	100.0	11 100.0
Idaho	23	100.0	-	-	-	-	23 100.0
Washington	4	28.6	-	-	10	71.4	14 100.0
Oregon	11	20.0	43	78.2	1	1.8	55 100.0
California	15	100.0	-	-	-	-	15 100.0
Other States	2	50.0	1	25.0	1	25.0	4 100.0
United States total	646	18.0	1,388	38.6	1,563	43.4	3,597 100.0
Wis., Minn., and Iowa total	530	26.3	1,304	64.8	179	8.9	2,013 100.0
United States total less Wis., Minn., and Iowa	116	7.3	84	5.3	1,384	87.4	1,584 100.0

1/ Group 1. More than 3 trips per week in summer; three (or more) trips per week in winter.

Group 2. Three trips per week in summer; two (or more) trips per week in winter.

Group 3. Two trips per week in summer; one (or more) trips per week in winter.

(No. 3) did not outrank both the higher frequency groups in importance. Thus, for the bulk of the territory, 2 trips per week is the typical arrangement. From the standpoint of volume, however, the bulk of the butter made cooperatively from route cream is picked up at least 3 times per week.

COMMISSION RATES ON CREAM ROUTES

Since the bulk of the route cream is delivered by commission haulers, the cost of procurement to most creameries can be measured by the commission rate. This is usually so much per pound of butterfat. The established rate, of course, ordinarily applies only to the cream actually hauled. Where there are regular direct deliveries, the average cost for the total volume must be less than the hauling rate. However, for comparative purposes, creameries are interested mainly in the commission rates, rather than the average cost on all butterfat. Accordingly, all the creameries with rate structures which permitted classification have been grouped according to the amount of commission paid.

Per Pound of Butterfat Basis

There were 476 creameries which followed the standard practice of paying haulers so much per pound of butterfat collected (table 9). Of these, 426 paid but one rate each and the remaining 50 paid two or more rates. For these 50, the rates have been averaged and recorded as one rate.

Three creameries, 2 in Wisconsin and 1 in Minnesota, paid less than 0.75 cent per pound of butterfat. The special circumstances permitting these low rates were not determined but presumably heavy volume was available in a concentrated territory. One of the Wisconsin creameries operated 4 cream routes at 0.5 cent, and the other had 1 cream and 3 mixed routes, with rates on cream ranging from 0.49 to 0.73 cent. The Minnesota creamery paid 0.5 cent but operated only one route.

Forty-nine creameries, or about 10 percent of those in table 9, paid between 0.75 and 1.24 cents per pound of butterfat which means, in most cases, the rate was 1 cent. Half of these creameries were located in Minnesota and the remainder were divided among 7 other States. All the States represented at this rate have dense production territories indicating at least a general relationship between these two factors.

The second largest group of creameries, or 145, paid between 1.25 and 1.74 cents, with a high concentration at the midpoint of 1.5 cents. Again, half of these were located in Minnesota; more than one-fourth were in Wisconsin. In all, creameries in 15 States reported rates in this range.

Table 9. - Commission Rates Paid Cream Haulers by 476 Cooperative Creameries Using a Per Pound of Butterfat Basis, 1940.

Creameries paying following commission rates on cream routes -											
State	Cents per pound of butterfat										
	Less										
	than 0.75 0.75-1.24 1.25-1.74 1.75-2.24 2.25-2.74 2.75 and over										
Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Total Number
Ohio	-	-	-	-	-	2	-	-	-	-	2
Indiana	-	-	-	-	3	1	4	-	-	-	8
Michigan	-	2	4	10	3	3	1	1	1	1	20
Illinois	-	-	1	5	1	1	1	1	1	1	8
Tennessee	-	-	1	1	-	-	-	-	-	-	2
Wisconsin	2	8	39	20	1	1	-	-	-	-	70
Minnesota	1	25	73	83	10	10	5	-	-	-	197
Iowa	-	4	12	43	31	31	13	-	-	-	103
North Dakota	-	-	1	4	-	-	-	-	-	-	5
South Dakota	-	-	4	7	-	-	-	-	-	-	11
Nebraska	-	-	-	6	1	1	-	-	-	-	7
Kansas	-	-	3	3	-	-	-	-	-	-	6
Missouri	-	-	1	1	-	-	-	-	-	-	2
Oklahoma	-	-	-	4	1	1	-	-	-	-	5
Colorado	-	1	-	2	-	-	-	-	-	-	3
Montana	-	-	1	-	2	2	-	-	-	-	3
Idaho	-	-	1	1	1	1	-	-	-	-	3
Washington	-	5	2	1	1	1	-	-	-	-	9
Oregon	-	2	-	1	1	1	-	-	-	-	4
California	-	2	1	-	-	-	-	-	-	-	3
Other States	-	-	1	3	1	1	-	-	-	-	5
United States total	3	49	145	198	57	24	476				476
Percent of total	0.6	10.3	30.5	41.6	12.0	5.0	100				100

The most important commission range was from 1.75 to 2.24 cents. This range included 41.6 percent of the creameries classified and applied to the greatest number of States. Again, there was a high concentration at the midpoint of 2 cents. Thus, $1\frac{1}{2}$ and 2 cents per pound of butterfat, taken together, were by far the most important rates for the country as a whole.

While about 11 percent of the creameries paid less than $1\frac{1}{2}$ cents, 17 percent paid more than 2 cents. Fifty-seven fell in the range of 2.25 - 2.74 cents and 24 paid about 3 cents (2.75 - 3.24). Compared with Minnesota and Wisconsin, rates tended to run high in Iowa. For example, for Minnesota and Wisconsin combined, 55 percent of the creameries paid less than 1.75 cents, whereas this was true of about 16 percent of the Iowa creameries. Illustrated in another way, only 6 percent of the Minnesota and Wisconsin creameries paid 2.25 cents or more as against close to 43 percent for Iowa.

All the creameries which paid cream haulers something in addition to the rate on butterfat for collecting cream such as, say, 1 cent a pound and 3 cents a mile, have been excluded from table 9. However, it was not always ascertained if the haulers were allowed another commission for delivering butter and other products to stores and patrons. Although typical with cooperatives in Illinois, this is known to be contrary to the general practice and could not affect many creameries. Where the selling commission is allowed, the rates on butterfat tend to be lower than otherwise.

Similar to the situation in table 2 showing the proportion of trucked cream at each creamery, the data in table 9 do not give an accurate measure of the average cost of procuring cream by these 476 creameries. This would involve weighting each rate by the volume hauled at that rate. While the volume records are not available, there is some evidence that the creameries falling in the highest rate brackets tend to be the largest creameries. Thus, the amount of cream hauled at, say, 2 cents as compared with $1\frac{1}{2}$ cents, is more than would be indicated by the ratio between 145 and 198 creameries.

Per 100 Pounds of Cream Basis

The second most frequent method of paying commission haulers was a fixed amount per 100 pounds of cream. However, only 53, or less than 10 percent of the 556 creameries reporting cream routes, used this system. Six States were represented. Forty-four creameries with one rate each, are distributed in table 10 according to the exact amount paid. All these rates were divisible by 5, that is, varied in 5-cent steps, ranging from a low of 25 cents to a high of 70 cents. Minnesota and Wisconsin accounted for 35 of this group of 44 and also accounted for the 9 creameries which were not tabulated because they used 2 rates each. All the double rates fell between the range of 30 and 50 cents per 100 pounds of cream, and thus would have been concentrated in the lower half of the table.

Table 10.- Commission Rates Paid Cream Haulers by 44 Cooperative Creameries Using 100 Pounds of Cream as Basis, 1940

Creameries paying specified commission rates per 100 pounds of cream											
State	Cents per 100 pounds of cream										Total
	25	30	35	40	45	50	55	60	65	70	
	Number of Creameries										
Minnesota	1	3	3	7	3	8	-	-	-	-	25
Wisconsin	1	-	3	6	-	-	-	-	-	-	10
Iowa	-	-	-	1	-	2	-	-	1	-	4
Michigan	-	-	-	-	-	1	1	-	-	-	2
Oregon	-	-	-	-	1	1	-	-	-	-	2
Missouri	-	-	-	-	-	-	-	-	-	1	1
Total	2	3	6	14	4	12	1	-	1	1	44

It is significant that, with the exception of the 70-cent rate in Missouri, the 100 pounds of cream basis was associated with relatively low hauling rates. The largest number, for example, fell at 40 cents. With 30 percent cream, this corresponds with $1\frac{1}{3}$ cents per pound of butterfat. Even at 50 cents, the next most frequent rate, the cost ordinarily would not exceed $1\frac{1}{2}$ cents per pound of butterfat.

The per pound of butterfat basis predominates probably because of its traditional use and because the hauling charge can be expressed in the same units that the patrons are paid for butterfat. However, the cream basis is a somewhat more accurate system of compensating haulers, since their income is based on the total volume delivered (as in the case of milk haulers) and is not influenced by variations in the butterfat content of the cream. For the same reason, it spreads the actual hauling costs somewhat more equitably among the patrons. Those with low testing cream are shipping more bulk and are penalized by paying a higher rate per unit of butterfat than the patrons with high testing cream.

The application of the per 100 pounds of cream basis has also worked out to give more refinement from the standpoint of price changes. This follows because custom has tended to fix the per pound basis at the even cent or $\frac{1}{2}$ cent. The 5-cent changes which are universally used with 100 pounds of cream result in smaller adjustments. For example, in going from 30 to 35 cents per 100 pounds, the rate on 30 percent cream goes from 1 to 1.17 cents per pound of butterfat. Under the other system, any increase would probably raise the rate from 1 up to $1\frac{1}{2}$, or at the least, to $1\frac{1}{4}$ cents.

A handful of creameries obtained this refinement on a butterfat basis by quoting the rate in terms of 100 pounds of butterfat. Thus, the rate may have been \$0.88 per 100 pounds of butterfat. This is acceptable while custom seems to preclude the rate of 0.88 cent per pound.

Other Methods of Paying Haulers

A wide variety of arrangements for paying haulers was reported among the creameries which did not conform to the standard practices referred to above. Some of the features of these unusual systems are described here because they have merits in some cases which may appeal to other creameries.

In general, there appear to be two reasons for deviations from traditional practices. One of these is that hauling is unimportant to the creamery. For example, 1 or 2 small routes are operated and the arrangements are made directly between the patrons and the hauler. The other is where the creamery has full control of the hauling, recognizes a number of discrepancies, and has attempted to refine its hauling rate structure. The latter group is of particular interest.

One system was to pay the hauler a combination of a fixed amount per pound or per 100 pounds and a fixed amount per mile of travel. This would appear to work only where the hauler's route of travel was rather rigidly defined. Otherwise he may travel excessive distances at the creamery's expense for a small profit to himself. A slight variation of this scheme was a fixed rate per pound collected and a fixed rate per mile from the county line to the plant. In these cases, the routes were extensive, and some haulers served patrons entirely outside the county in which the plant was located.

Another group paid either (1) a fixed amount per mile, (2) a fixed amount per trip, (3) a fixed amount per can, or (4) a fixed amount per patron per month. While each of these systems may be adjusted to return the hauler about the same annual amount as a per unit of cream or butterfat basis, and therefore result in about the same total hauling expense to the group, it is doubtful if they would appeal to many large creameries. They have the advantage of equalizing the hauler's income from week to week, but this is offset by destroying the relationship between income and hauling expense at the creamery. During the flush season, the per unit cost of hauling is low relative to the short season. Unless funds are carried over, an unusually heavy hauling burden falls on the patrons when other creamery expenses are also high.

Those creameries which appeared to be attempting to spread the hauling costs more equitably among the patrons used the per pound of butterfat basis with variations. One method provided for a minimum amount per patron per pay period. That is, if the established rate times the patron's volume gave less than, say \$1.00, the hauler still

received \$1.00 for serving him during the period. Others applied the same principle to maximum amounts a hauler could collect from patrons during a pay period and a few used a combination of minimum and maximum amounts. These systems also have a bearing on the hauling cost to patrons and are mentioned below in connection with hauling deductions.

The practice of charging different rates on different routes, while not affecting the rates charged patrons within a route, is an attempt to compensate for differences in costs as between routes. Distance, accessibility, volume per patron, and road conditions were mentioned most frequently as the reason for the different rates. Far-out patrons are frequently more scattered and may also have relatively lighter production. Thus, actual collection costs are much higher on some routes than others. This situation also prevails to a more or less degree at every creamery using a uniform rate for all routes.

One creamery reported an interesting and progressive arrangement whereby the hauler received 1 cent per pound for butterfat picked up at the roadside and $1\frac{1}{2}$ cents for milk house service. Several using the butterfat basis paid haulers one rate for a specified volume per period and a lower rate for all additional volume. Still others varied the rate paid for hauling automatically with specified changes in the price paid patrons for butterfat. In several instances, rates were higher in the winter than in the summer.

METHOD OF ARRIVING AT HAULING RATES

By and large, creameries using commission or contract haulers arrive at the hauling rates by one of three methods. In most cases, rates are arrived at as a result of negotiations between the creamery board and the haulers. Under a second method, rates are established directly between the hauler and the patrons being served. The third and relatively unimportant method, is to establish rates by competitive bids, usually covering a period of one year. Exceptions to these principal methods arise in a few instances where rates are fixed for common carriers by public regulation or where negotiations are carried on between representatives of a drivers' union and the creamery.

There were 573 creameries with commission haulers which indicated that they used one of the three principal methods. These are distributed in table 11 according to method.

Close to 68 percent, including creameries in every State, established rates as a result of negotiations between the creamery and the haulers. This does not mean, in most cases, that meetings were scheduled periodically to discuss rates. It means rather that the rate was set by the board and agreed to by the hauler when he accepted the job of hauling. Unless the haulers demand an increase or the creamery believes its rates should be lower, a given rate may prevail over a period of years without formal negotiations of any kind. According

Table 11. - Method of Arriving at Cream Hauling Rate at 573 Cooperative Creameries Using Commission Cream Haulers, United States, 1940.

State	Creameries arriving at cream hauling rates as a result of			
	Negotia- tions be- tween creamery and hauler	Direct arrange- ment between patron and hauler	Com- petitive bids	Total
	<u>Number</u>	<u>Number</u>	<u>Number</u>	<u>Number</u>
Ohio	1	2	-	3
Indiana	8	1	-	9
Michigan	24	3	-	27
Illinois	6	1	-	7
Tennessee	1	1	-	2
Wisconsin	73	27	9	109
Minnesota	127	95	4	226
Iowa	83	24	8	115
North Dakota	4	1	-	5
South Dakota	10	1	-	11
Nebraska	6	-	1	7
Kansas	6	-	-	6
Missouri	2	1	-	3
Oklahoma	4	-	-	4
Colorado	3	-	-	3
Montana	3	-	-	3
Idaho	3	-	-	3
Washington	6	2	1	9
Oregon	6	-	-	6
California	7	-	-	7
Other States	<u>4</u>	<u>4</u>	-	<u>8</u>
United States total	<u>383</u>	<u>163</u>	<u>23</u>	<u>573</u>
Percentage of total	67.6	28.4	4.0	100.0

to reports, the board may approve rates annually, even though unchanged, or the rates may be taken more or less for granted until a situation arises calling for board action.

In most of the remaining creameries (28.4 percent of the total) the rates were arrived at directly between the hauler and the patrons. This arrangement was almost always associated with small creameries or those receiving a small proportion of their volume by truck. The tri-State butter area, for example, included 90 percent of this group and only 73 percent of those in which the creamery board took part.

Direct arrangements usually originate from a situation wherein producers in the same community have been taking turns hauling all their cream to the plant. Eventually one patron or a member of his family agrees to haul every delivery day for a certain charge. If this is acceptable, he has the beginning of a route which may be gradually expanded. The creamery has no control over the route or the rates charged. However, with the permission of the patrons involved, the creamery handles collections for the haulers by making agreed deductions from the patrons' checks and turning the sum thus collected over to the hauler each pay period. Different rates may be charged different patrons on the same route under this arrangement, but this appears to be the exception to the rule.

Only 23 creameries in 5 States reported the use of competitive bids. Little information was obtained concerning the success or operation of this plan, but it was frequently associated with different rates for different routes at the same creamery and with deviations from the even cent or 1/2 cent. This suggests the plan may help introduce refinements and perhaps lower hauling costs. At one creamery it was reported that a single bid covered the entire hauling. Presumably the successful bidder provided all the hauling service or sublet to other contractors. In the other cases, it appeared that a separate bid was involved on each route operated by the creamery.

HAULING DEDUCTIONS ON CREAM ROUTES

The exact amount paid contract cream haulers may or may not be deducted pro rata from the patrons' checks. In some cases this follows from numerous odd methods of paying haulers which do not permit corresponding deductions such as a fixed amount per trip or a fixed amount per mile. The same is true of many of the combination methods. However, even with the straight commission per pound of butterfat or per 100 pounds of cream, some creameries either make no deductions for hauling or deduct less than the amount paid haulers. If there is no hauling deduction, an allowance may or may not be made for patrons delivering their own cream. Also, minimum and maximum hauling charges per patron per period may not be directly related to the amounts paid haulers. The survey reveals such a wide variety of practices in respect to deductions that it is difficult to make a tabular presentation of many of the arrangements. Therefore, what appear to be the general tendencies are discussed here with special reference to certain States.

Deductions equal payments made haulers. About half the creameries reporting routes, largely due to the influence of Minnesota, deducted the exact amount paid haulers from the patrons' checks. This was necessarily true where the hauling charges were a matter of direct arrangement between the patrons and the haulers. Where the creamery established the rates, corresponding deductions were made mainly in cases where the hauling rate was relatively low; that is $1\frac{1}{2}$ cents or under. Several creameries, however, paid and deducted 2 cents, but 2 cents was usually the maximum deduction regardless of the rate paid haulers.

Split deductions. In line with what has just been said, a large proportion of the creameries which controlled the rates deducted less than the amount paid haulers, particularly when the rates were high. Among this group, there was a strong tendency to limit the deduction to 1 cent even though the rates paid haulers covered a range up to 3 cents, or more.

No deductions. The practice of not making any deductions for hauling was limited mainly to the large creameries which received all or a substantial proportion of their volume on truck routes. In these cases the entire cost of hauling was considered a creamery operating expense and all prices were quoted net at the farm. A small percentage of these allowed 1 or 2 cents more to patrons who brought their cream to the plant. This was not general because it would defeat the purpose of the plan at most creameries. Those making no deductions apparently followed this practice to discourage direct deliveries or, stated in another way, to encourage patrons to use the route service.

Differences between States

The practices regarding hauling deductions vary distinctly from State to State and from area to area. This is natural because competitive considerations tend to set the standards for all creameries similarly located. At the same time there is a high degree of correlation between the size of creameries, the proportion of route cream and creamery control over hauling rates. Therefore the differences may still be explained in these terms even though they tend to follow State lines.

In Michigan, for example, where there are many large creameries and a high proportion of trucked cream, it was the general practice not to make any hauling deductions. This was also true in northwest Iowa and in other areas. Of 24 Iowa creameries which made no deductions, 7 paid a higher price on door deliveries. This was not done in Michigan.

In Minnesota, on the other hand, nearly three-fourths of the creameries deducted the full amount paid haulers. Of the remaining one-fourth, all except 4 used the divided arrangement. Four made no deduction, but 2 of these paid a premium on door deliveries. Thus,

only 2 creameries omitted hauling entirely from the settlement. The situation in Wisconsin was somewhat similar where about 60 percent made complete deductions and only one made no deduction at all.

It is also of some interest that in almost every case where haulers were paid on the basis of 100 pounds of cream, corresponding deductions were made. It will be recalled that the per 100 pounds of cream basis was associated with relatively low rates.

RATES AND DEDUCTIONS ON MILK ROUTES

Generally speaking, milk hauling arrangements were more standardized than in the case of cream. For example, virtually all commission rates were based on per 100 pounds of milk with no other provisions. Also, hauling deductions were always made from the milk checks. In some cases, however, the deductions were less than the commission rate paid haulers.

Table 12 shows the rates paid milk haulers by 148 creameries during 1940. With minor exceptions, each of these paid one rate per 100 pounds of milk hauled. Three paid haulers so much per pound of butterfat in milk. These were adjusted for grouping on the assumption of 4 percent milk. A few also paid two rates, within the range of one class in the frequency distribution.

Nearly 55 percent of these creameries paid milk haulers from 10 to 14 cents per 100 pounds. About 40 percent paid more and 5 percent paid less. Nearly 15 percent paid 20 cents and over, with rates up to 30 cents per 100 pounds of milk. With few exceptions, the 22 creameries in the high rate group were in States of relatively sparse milk production.

The number of creameries deducting the full commission paid milk haulers pro rata from the patrons' checks is shown in the last column of table 12. In all, 104 creameries or about 70 percent of the total, followed this practice. The remaining 44 paid part of the hauling out of the general fund. Most of these (27) were in Wisconsin where there was a strong tendency to limit the deduction to 10 cents whenever the commission rates were 15 cents or more. In Minnesota, 35 out of the 36 listed made corresponding deductions, while only 34 out of 61 did so in Wisconsin.

Two creameries deducted so much per pound of butterfat even though haulers were paid on the basis of 100 pounds of milk.

In addition to the 148 creameries classified in table 12, there were 30 other creameries, mostly in Wisconsin or Minnesota, with commission milk haulers which used different rates for different routes. Most of these were limited to 2 rates with some as high as 3 and 4 different rates. Distance of travel was given as the principal reason for the differences. The rates for these 30 creameries ranged from

Table 12.- Commission Rates Paid on Milk Routes by 148 Cooperative Creameries, 1940

State	Creameries paying following commission rates on milk routes - cents per 100 lbs. -					Creameries deducting full commission
	Under 10	10-14	15-19	20 and over	Total	
	Number	Number	Number	Number	Number	Number
Indiana	-	-	-	3	3	3
Michigan	-	2	4	5	11	6
Wisconsin	1	41	19	-	61	34
Minnesota	3	29	4	-	36	35
Iowa	-	2	1	-	3	3
Missouri	-	-	1	1	2	1
Oklahoma	-	-	-	3	3	3
Idaho	-	2	2	-	4	2
Washington	1	2	3	1 ^{1/}	7	4
Oregon	-	1	3	1	5	4
California	2	2 ^{1/}	-	-	3	2
Other States ^{3/}	-	2 ^{1/}	1	8	10	7
Total	7	81	38	22	148	104
Percentage of total	4.7	54.7	25.7	14.9	100	70.3

^{1/} Commission rate was 5 cents per pound of butterfat.

^{2/} Commission rate was 3 cents per pound of butterfat.

^{3/} Other States include Ohio, Illinois, Nebraska, Kansas, Montana, Texas, Maine, Vermont, and Pennsylvania.

5 to 30 cents per 100 pounds, with concentrations at 10, 12, 15, and 20 cents. Eleven had rates on some routes of 20 cents and over.

Seventeen of this group deducted corresponding amounts from patrons. Creameries are not as likely to make exact deductions under a range of rates as with one rate. There was a tendency to subsidize the most distant milk patrons by making the same deduction from all, even though haulers were paid differential rates.

There were exceptional cases in which creameries used variations from standard arrangements similar to those found among cream routes. For example, one Oregon creamery had maximum hauling charges on milk, one California creamery paid some of its haulers by the can, and one in Idaho charged patrons 2 cents for roadside pick-up and 10 cents for milk house service. In Washington, one creamery varied the rates within a route, by charging a lower rate below a long hill than above it. By and large, however, there are few deviations from standard practices on milk routes.



